

5 INTRAOPERATIVE MONITORING OF TEMPERATURE-INDUCED TISSUE CHANGES
 WITH A HIGH-RESOLUTION DIGITAL
 X-RAY SYSTEM DURING THERMOTHERAPY

 ABSTRACT OF THE DISCLOSURE

10 A method of thermally inducing and monitoring changes to localized regions of tissue
illuminating a volume of tissue with a first beam of X-rays, detecting the portions of the first
beam of X-rays that passed through the volume of tissue, generating a first X-ray image signal
from the portions of X10 rays of the first beam detected, applying heat to at least a localized
region of tissue within the volume of tissue after the illuminating and after the detecting,
15 illuminating the volume of tissue with a second beam of X-rays, detecting portions of the second
beam of X-rays that passed through the volume of tissue during the illuminating with the second
beam of X-rays, generating a second X-ray image signal from the portions of X-rays of the
second beam detected, and generating a difference image signal based upon a comparison of the
first and second X-ray image signals. The difference image signal provides information of
20 changes in X-ray attenuation by localized regions of tissue within the volume of tissue due to the
application of heat.